Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-16. (canceled)

17. (previously presented) A method, performed by a computing device, of controlling transmission characteristics of cable modems, comprising:

periodically broadcasting a plurality of upstream channel descriptors to one or more downstream channels, each of the plurality of upstream channel descriptors describing different transmission characteristics,

monitoring upstream transmission quality of one or more cable modems, each of the cable modems associated with an upstream channel descriptor of the plurality of upstream channel descriptors; and

commanding, based on the monitored upstream transmission quality, at least one of the one or more cable modems to change associated transmission characteristics by selecting a different upstream channel descriptor of the plurality of channel descriptors, where changing the associated transmission characteristics includes transmitting on a different upstream virtual channel and changing from a first preamble length to a second different preamble length.

18. (canceled)

19. (previously presented) The method of claim 17, where commanding at least one of the one or more modems to change associated transmission characteristics comprises:

commanding the at least one of the one or more modems to change an associated modulation based on the monitored quality.

20. (previously presented) The method of claim 19, where commanding the at least one of the one or more modems to change associated modulation further comprises:

commanding the at least one of the one or more modems to change from quadrature phase shift keying (QPSK) modulation to at least one of 16 quadrature amplitude modulation (16QAM), 8QAM, 32QAM, or 64QAM.

21. (previously presented) The method of claim 17, where the quality comprises at least one of bit-error-rate or signal-to-noise ratio.

22. (currently amended) A cable modem termination system, comprising:

a memory to store instructions; and

a processor to execute the instructions in the memory to:

monitor upstream transmission quality of one or more cable modems, and

instruct at least one of the one or more cable modems to change its transmission characteristics, including changing from a first data block size to a second different data block size ~~changing from a first time division multiplexed timeslot size to a second different time division multiplexed timeslot size~~, when the monitored quality meets a specified criteria.

23. (original) The system of claim 22, further comprising:

commanding the at least one of the one or more cable modems to transmit on a different upstream virtual channel when the monitored quality meets the specified criteria.

24. (previously presented) The system of claim 22, where commanding at least one of the one or more modems to change its transmission characteristics comprises:

commanding the at least one of the one or more modems to change its modulation when the monitored quality meets the specified criteria.

25. (previously presented) The system of claim 24, where commanding the at least one of the one or more modems to change its modulation further comprises:

commanding the at least one of the one or more modems to change from quadrature phase shift keying (QPSK) modulation to at least one of 16 quadrature amplitude modulation (16QAM), 8QAM, 32QAM or 64QAM.

26. (previously presented) The system of claim 22, where the quality comprises at least one of bit-error-rate or signal-to-noise ratio.

27-40. (canceled)

41. (currently amended) A system for controlling transmission characteristics of a cable modem, the system comprising:

a processor to:

~~means for sending~~ send an upstream channel descriptor to one or more cable modems;

~~means for monitoring~~ monitor upstream transmission quality of the one or more cable modems; and

~~means for commanding~~ command at least one of the one or more cable modems to change its transmission characteristics, including changing from a first data block size to a second different data block size, based on the sent upstream channel descriptor and the monitored quality.